

LANCIA RACK & PINION

Lancia Beta
Coupe
Sedan
HPE

DESCRIPTION

All models use a rack and pinion steering gear. The steering wheel turning motion is transmitted by the pinion gear to the rack, causing it to move side-to-side to turn the road wheels. A steering gear damper is also attached to this rack housing. This dampens road shocks.

NOTE — Power-assisted rack and pinion is also available on all models. See appropriate article under POWER STEERING in this section.

ADJUSTMENT

NOTE — Adjustments are included within the Overhaul procedure contained in this article.

REMOVAL & INSTALLATION

Removal — 1) Remove hub caps and loosen wheel nuts. Remove bolt from steering column coupling, located inside passenger compartment just above floor board.

2) Install suitable holding device on steering wheel to retain wheel in straight-ahead position (spokes horizontal). Raise front of vehicle and support with frame stands. Remove front wheels.

3) Separate tie rod end (steering rod) ball joints from steering knuckles. Remove steering rack housing mounting bolts and clamps, and remove rack and pinion steering assembly from vehicle.

Installation — 1) Move rack from lock-to-lock and count number of turns on pinion as rack travels the distance. Determine the halfway point and move rack back to this position (this will set the center point).

2) Position rack and pinion assembly to its mounting and install retaining clamps and bolts. Connect tie rod end ball joints and torque retaining nuts.

3) Attach pinion shaft to steering shaft coupling. Remove the holding device from steering wheel. Replace front wheels and lower vehicle.

OVERHAUL

Disassembly — 1) After removing rack and pinion steering gear, loosen clamp from one end of bellows and drain oil.

2) Clamp housing in soft-jawed vise. Straighten locking tabs and remove bolts holding tie rod ends to housing. Remove tie rod ends.

3) Remove rubber mounting insulators. Loosen clips and remove rubber caps and guard from housing.

4) Remove damper cover, gasket, shims, spring and damper. Remove pinion cover, gasket, shims and pinion (with upper bearing).

5) Withdraw rack and plastic bushing from housing. Remove lower pinion bearing.

6) Inspect all components for any wear. Replace as necessary.

NOTE — It is recommended that pinion housing seal be replaced.

Assembly & Adjustments — 1) Insert plastic bushing into rack housing and position it in locating grooves.

2) Install lower pinion bearing, pinion and upper bearing thrust piece, upper bearing and a .09" (2.3 mm) spacing washer.

3) Set pinion bearing preload as follows:

1. Position dial gauge (set to zero) on pinion housing and measure distance between pinion cover mounting surface and top of washer.
2. To obtain a preload (turning torque) of .15-.29 ft. lbs. (.02-.04 mkg), the measured distance must be .001-.005" (.025-.130 mm). Insert shims or use thinner washer as required to set proper distance.

4) When preload is set, remove pinion, shims and upper bearing. Insert rack into housing from pinion housing end, placing rack in center position.

5) Insert pinion, meshing it with rack teeth. Install shims between upper bearing and washer. Install pinion cover and retaining bolts with lock-tab washers. Torque bolts to .15 ft. lbs. (.02 mkg).

6) Now, set rack backlash as follows:

1. Insert rack damper and position damper cover without gasket or shims. Use a feeler gauge and measure gap between cover and mounting face.
2. To the amount of gap, add the amount of specified backlash of .002-.004" (.05-.10 mm). Now subtract the amount of thickness of the cover gasket.
3. This amount will equal the thickness of shims to be installed in order to give a rack backlash of .002-.004" (.05-.10 mm).

7) Remove damper cover. Insert spring, shims, cover gasket and cover. Coat retaining bolts and edges of shims with sealing compound. Torque bolts to .15 ft. lbs. (.02 mkg).

8) Position bellows and rubber dust caps to rack housing (leave end of one bellow loose until housing is filled with oil). Install spacers before tightening rubber guard securing clips. Lock the clips.

9) Fit steering rods to rack housing with washers, positioning them horizontally. Tighten mounting bolts.

10) Fill rack housing with suitable steering gear oil. Position and tighten end of bellows left loose. Use torquemeter or other suitable device to measure and ensure a pinion turning torque of .15-.29 ft. lbs. (.02-.04 mkg).